

# Exhibit to Agenda Item #1

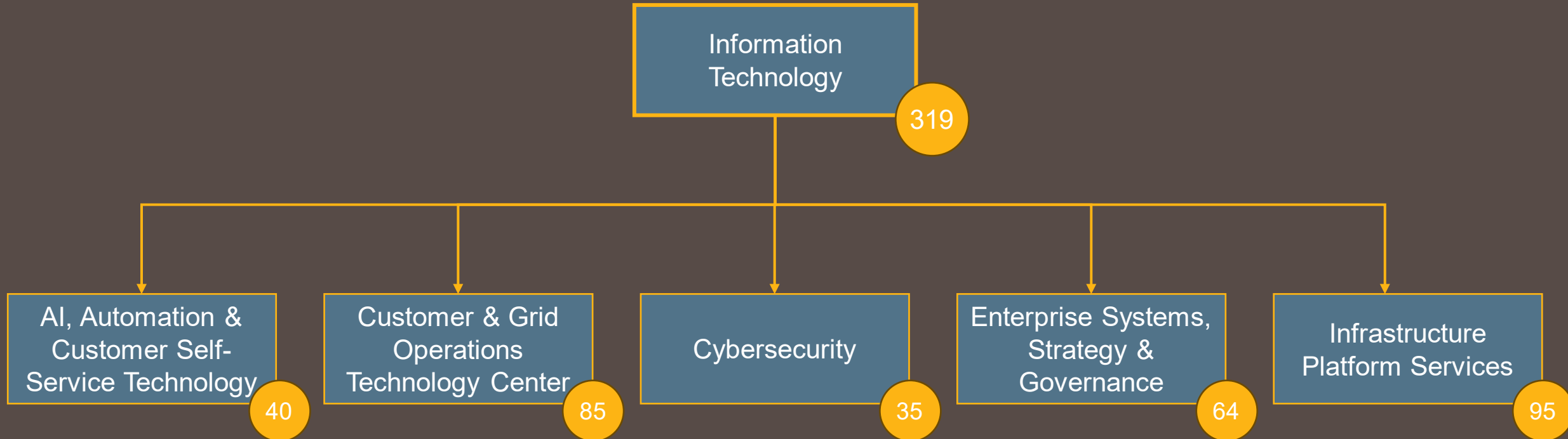
Brief the Board on SMUD's Information Technology Strategic Plan.

Board Strategic Development Committee and Special SMUD Board of Directors Meeting

Tuesday, September 10, 2024, scheduled to begin at 6:00 p.m.

SMUD Headquarters Building, Auditorium

# Information Technology (IT) Organization





# “FIRST” Guiding Principles



Our “FIRST” guiding principles provide a framework for value-driven, right-sized technology solutions in alignment with our Clean Energy Vision

## Focus

on value-driven, right-sized solutions with limited customization.

## Intelligent

engineering to Keep the Lights On (KTLO) and for our future.

## Reuse

before buy, buy before build, with a platform-first approach.

## Secure by design.

## Technology

requires a change management lens of tech + process + people.



# Strategic Technology Roadmaps



## Zero Trust Roadmap

Implement a Zero-Trust security model and deploy principles to better position SMUD to secure sensitive data, systems, and services.



## Systems Applications and Products (SAP) Roadmap

Roadmap will include upgrade plan and timeline for S/4 HANA upgrade.



## Next Gen Utility Technology Roadmap

Roadmap will feature Advanced Metering Infrastructure workstreams detailing analytics, readiness, deployment and grid edge.



## Customer Technology Roadmap

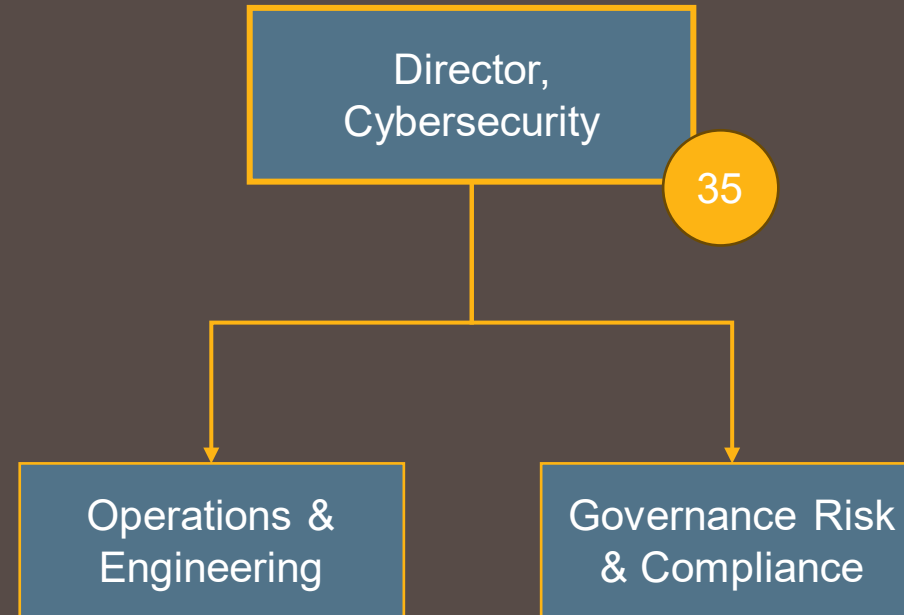
Roadmap will enable and support the 5-year plan developed by the Customer teams. From a technical perspective, the roadmap will identify opportunities to simplify the landscape and reduce the number of disparate systems to ease support and enhance agility.



## Cloud Strategy Roadmap

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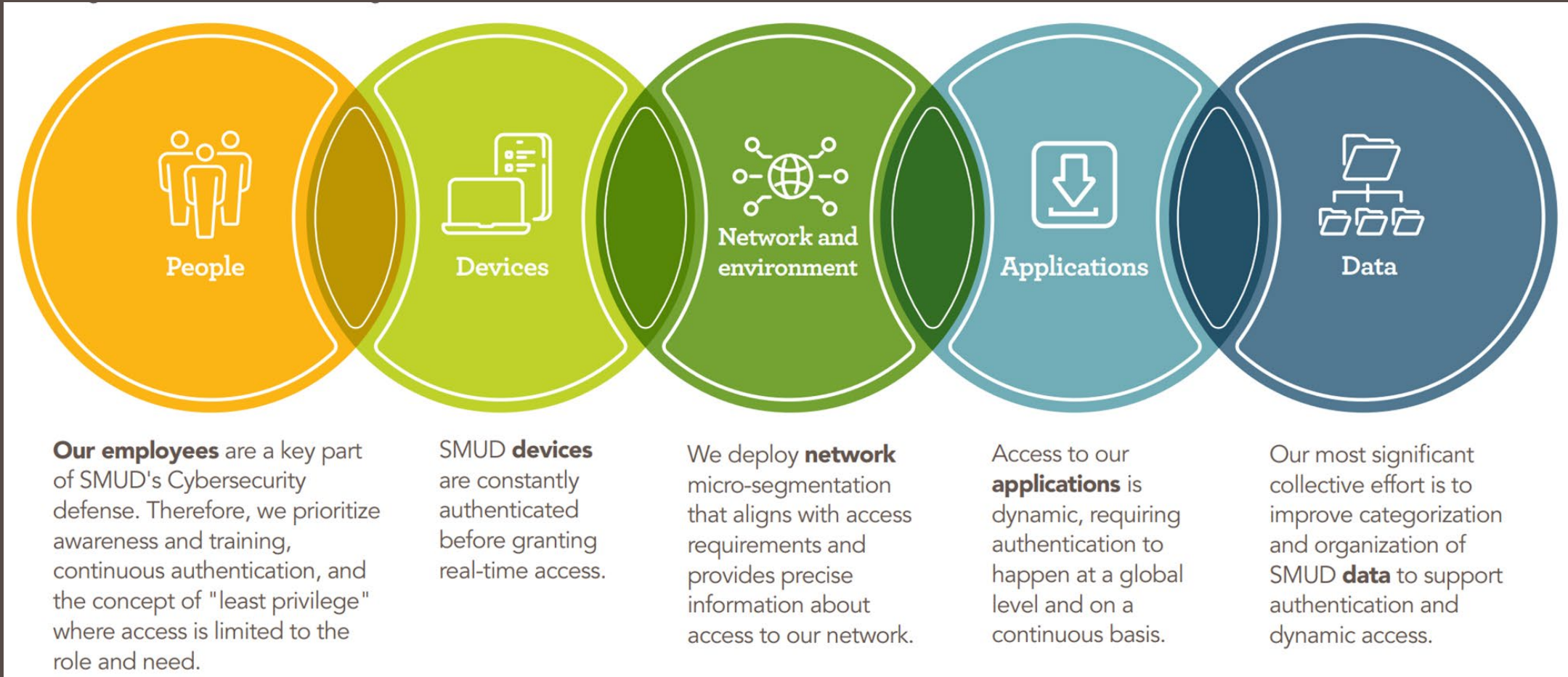
# Cybersecurity Organization



# Why Zero Trust at SMUD

- **Decisive way to Improve Cybersecurity Operations and Reduce Cyber Risk**
  - Data-centric security model
  - Concept of least-privileged access to be applied for every access decision
    - Who, What, When, Where, and How are critical for appropriately allowing or denying access to SMUD's resources
  - Risk mitigation: closing security gaps & minimize cyber risk of attacker lateral movement
- **Productivity Everywhere**
  - Empower SMUD's Users to work securely anywhere and anytime, on any device
- **Cloud Migration**
  - Enable digital transformation with intelligent security for today's complex environment

# SMUD's Cybersecurity Zero Trust Model

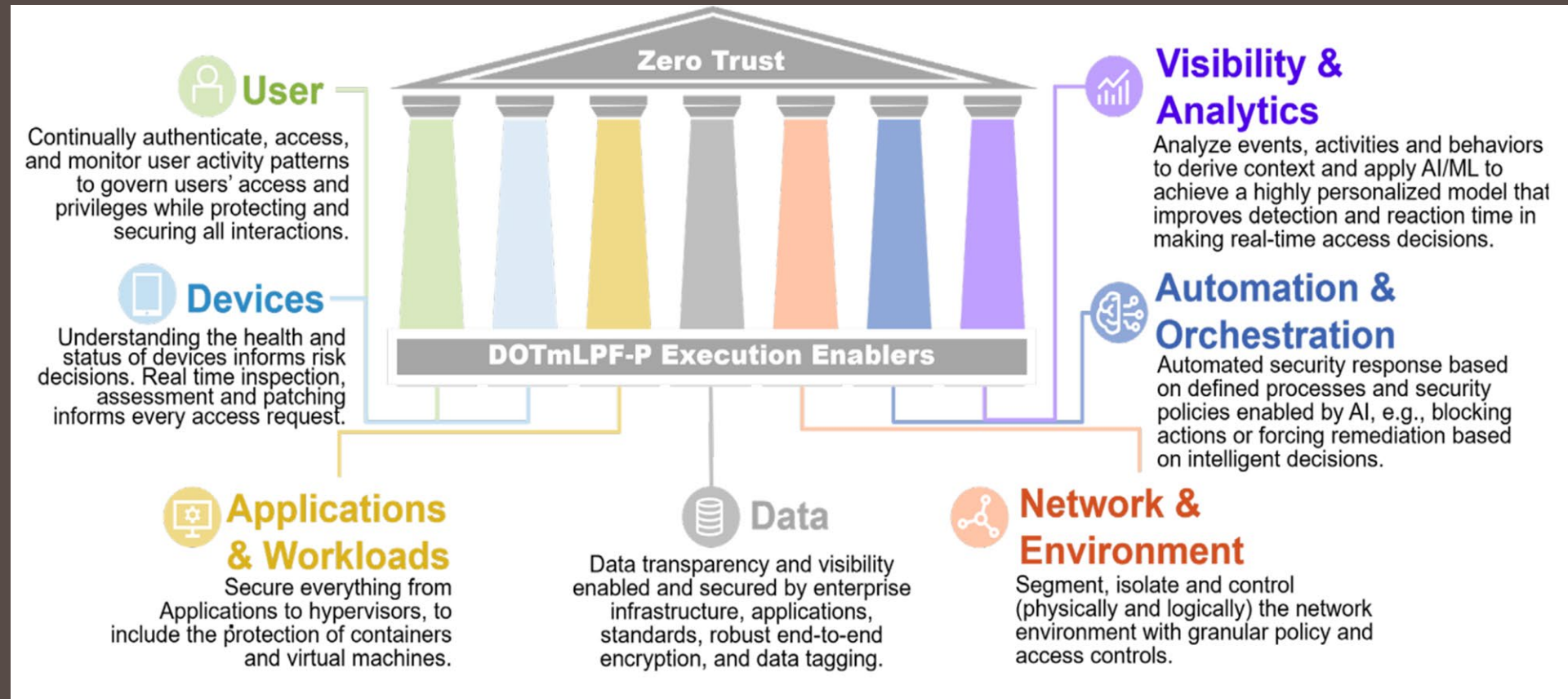


# Zero Trust Principles

- **Verify explicitly**
  - Always authenticate and authorize based on all available data points, including user identity, location, device health, service or workload, data classification, and anomalies.
- **User least-privilege access**
  - Limit user access with just-in-time and just-enough access, risk-based adaptive policies, and data protection to help secure both data and productivity.
- **Assume breach (compromise)**
  - Minimize blast radius and segment access. Verify end-to-end encryption and use analytics to get visibility, drive threat detection, and improve defenses.



# Zero Trust Architecture



# Zero Trust Architecture Pillar's Cybersecurity Opportunities to Reduce Risk

- **User:** Verify and secure identities with strong authentication for access to all resources.
- **Device:** Visibility into devices accessing the network. Ensure compliance and health status before granting access.
- **Application:** Discover unauthorized applications, harden configurations, ensure appropriate in-app permissions, gate access based on real-time analytics, and monitor and control user actions.
- **Data:** Move from perimeter-based data protection to data-driven protection. Use intelligence to classify and label data. Encrypt and restrict access based on organizational policies.
- **Network and Environment:** Ensure that devices and users aren't trusted just because they're on an internal network. Encrypt all internal communications, limit access by policy, and employ micro-segmentation and real-time threat detection.
- **Automation and Orchestration:** Use telemetry to detect attacks and anomalies, automatically block and flag risky behavior, and employ least-privilege access principles.
- **Visibility and Analytics:** Analyze events, activities, and behaviors to derive context and apply Artificial Intelligence and Machine Learning to improve detection and support real-time decision making.



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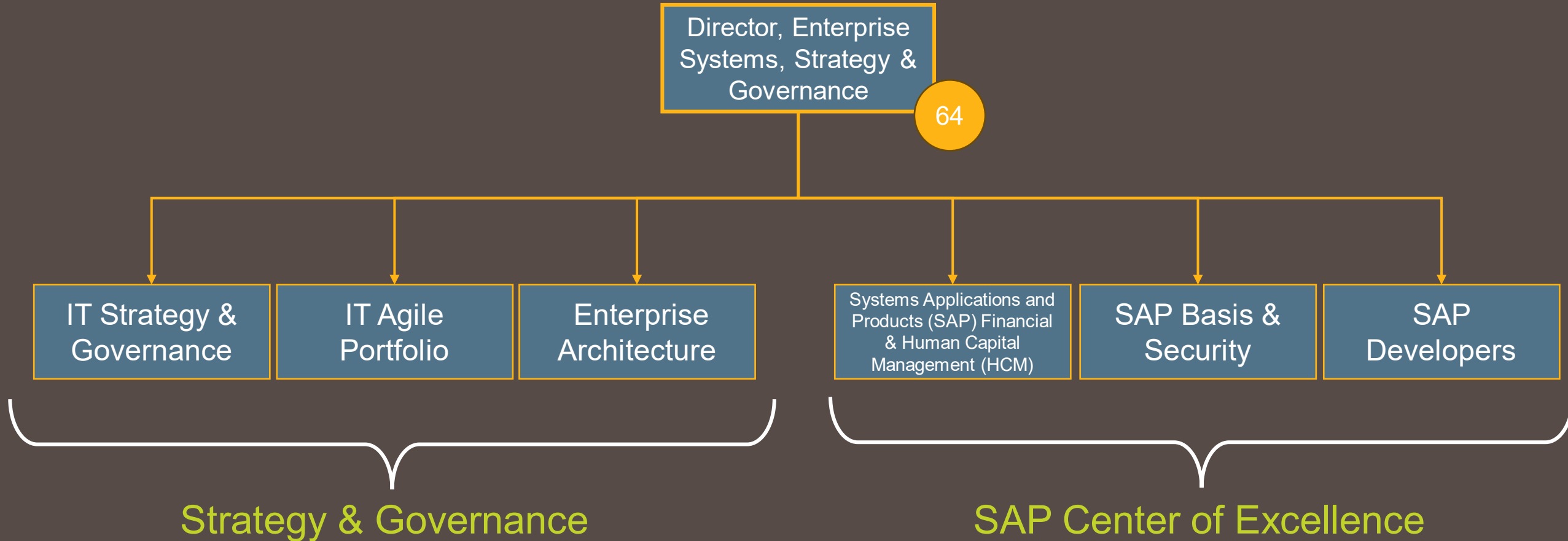
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# Enterprise Systems, Strategy & Governance Organization



# Systems Applications and Products (SAP) Roadmap

SMUD's Journey to the next  
generation of Enterprise  
Resource Planning (ERP)  
solution (S/4 HANA)



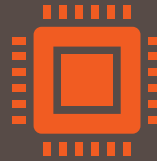
# What is S/4HANA? (SAP Business Suite for SAP HANA)



Major, generational replacement for the core SAP Enterprise Resource Planning (ECC) and Customer Relationship Management (CRM) systems we currently use.



At its most basic, looks and runs similar to our current core SAP ECC system.



Underlying databases are improved, faster, and more flexible for interfaces with other modern applications.

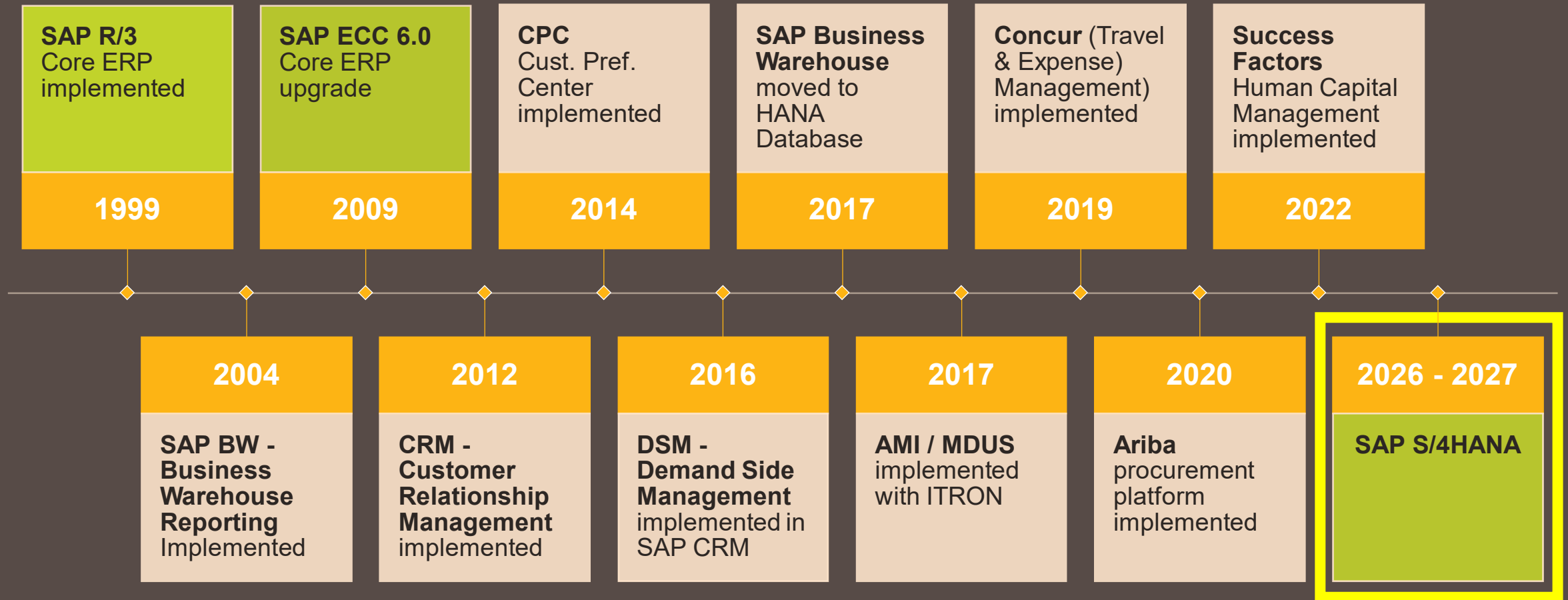


S/4HANA brings SMUD in line with newest SAP innovations and functionalities.



Improved user experience, and flexibility to use more modern interfaces including SAP Fiori.

# SMUD's SAP Journey



# Why are we looking to S/4HANA upgrade?



SAP has stopped developing new functionalities and products in SAP ECC and SAP CRM platform since Enhancement Package version 8 (2016).

S/4HANA will help us to optimize, modernize the way we perform work.

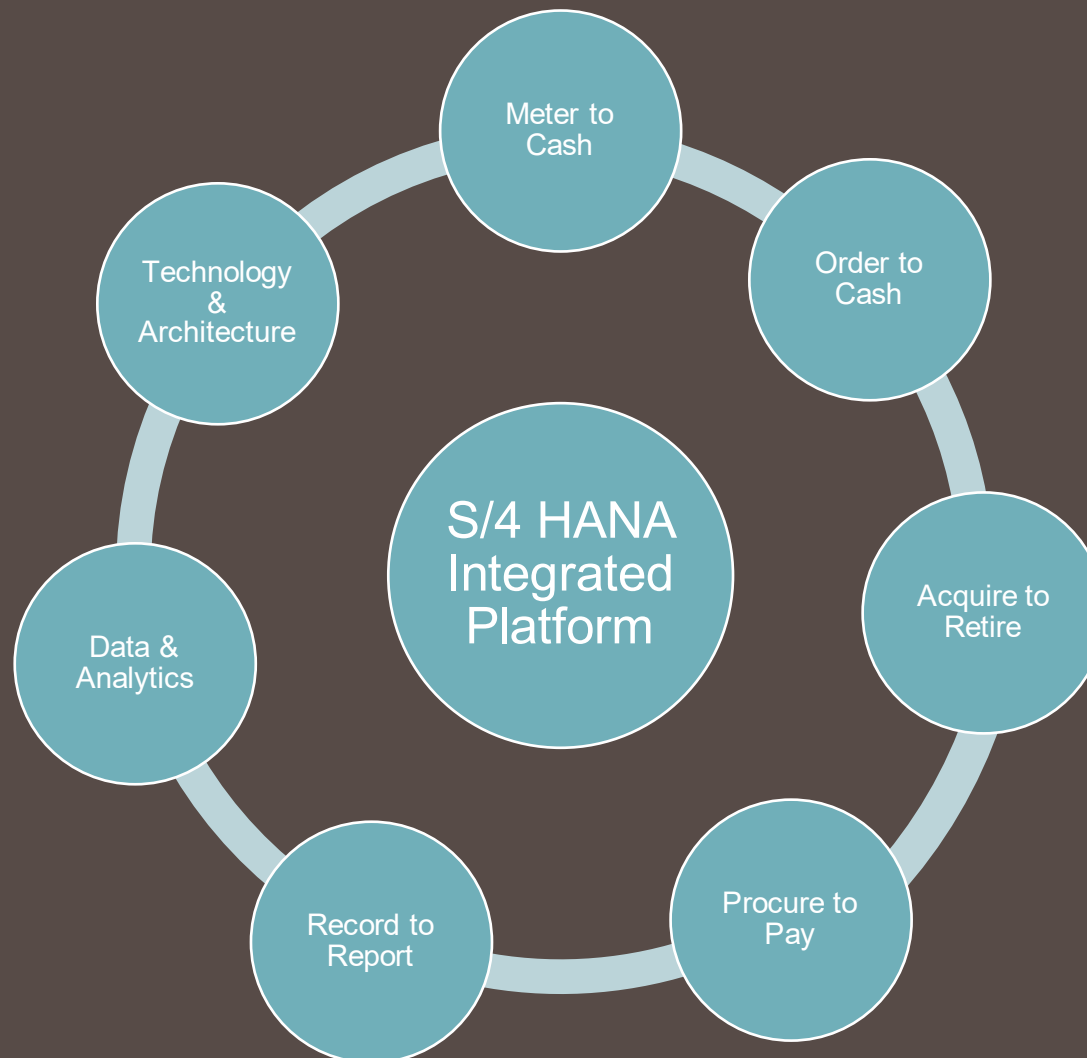
SAP S/4HANA has already proven out with comparable utilities such as Nebraska Public Power District and Northwestern Energy.

SMUD already has considerable employee expertise and familiarity with SAP technologies and functional processes.

SAP has announced the end of life and exit the mainstream support in 2027. Extended support with 2% maintenance cost increase until 2030. They will stop providing technical support for two core systems we use at SMUD today -- SAP ECC and SAP CRM.



# S/4HANA Integrated Platform



# S/4HANA Benefits



## **Faster Financial Close:**

SMUD can potentially reduce time required to close books at the end of financial periods due to streamlined processes and real-time data processing capabilities.



## **Reduction in Data Footprint:**

S/4HANA's simplified data model and in-memory computing can reduce the data footprint, leading to faster processing times and reduced storage costs.



## **Improved Productivity:**

Enhanced user interfaces and automated processes can increase SMUD's productivity as employees spend less time on manual tasks and data entry.



## **Real-time Reporting:**

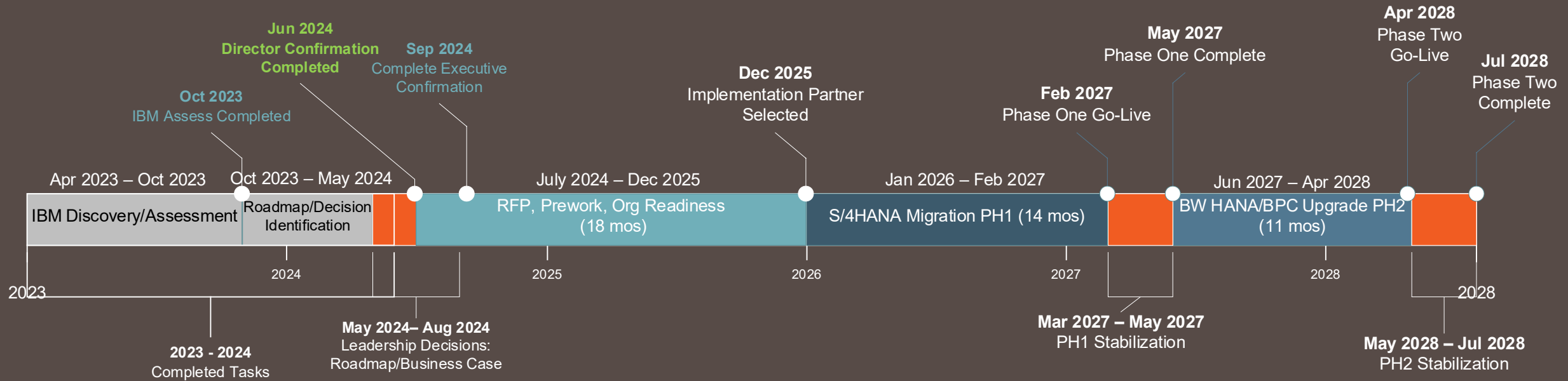
Real-time analytics and reporting capabilities can improve the speed and accuracy of reporting, providing timely insights for better decision-making.



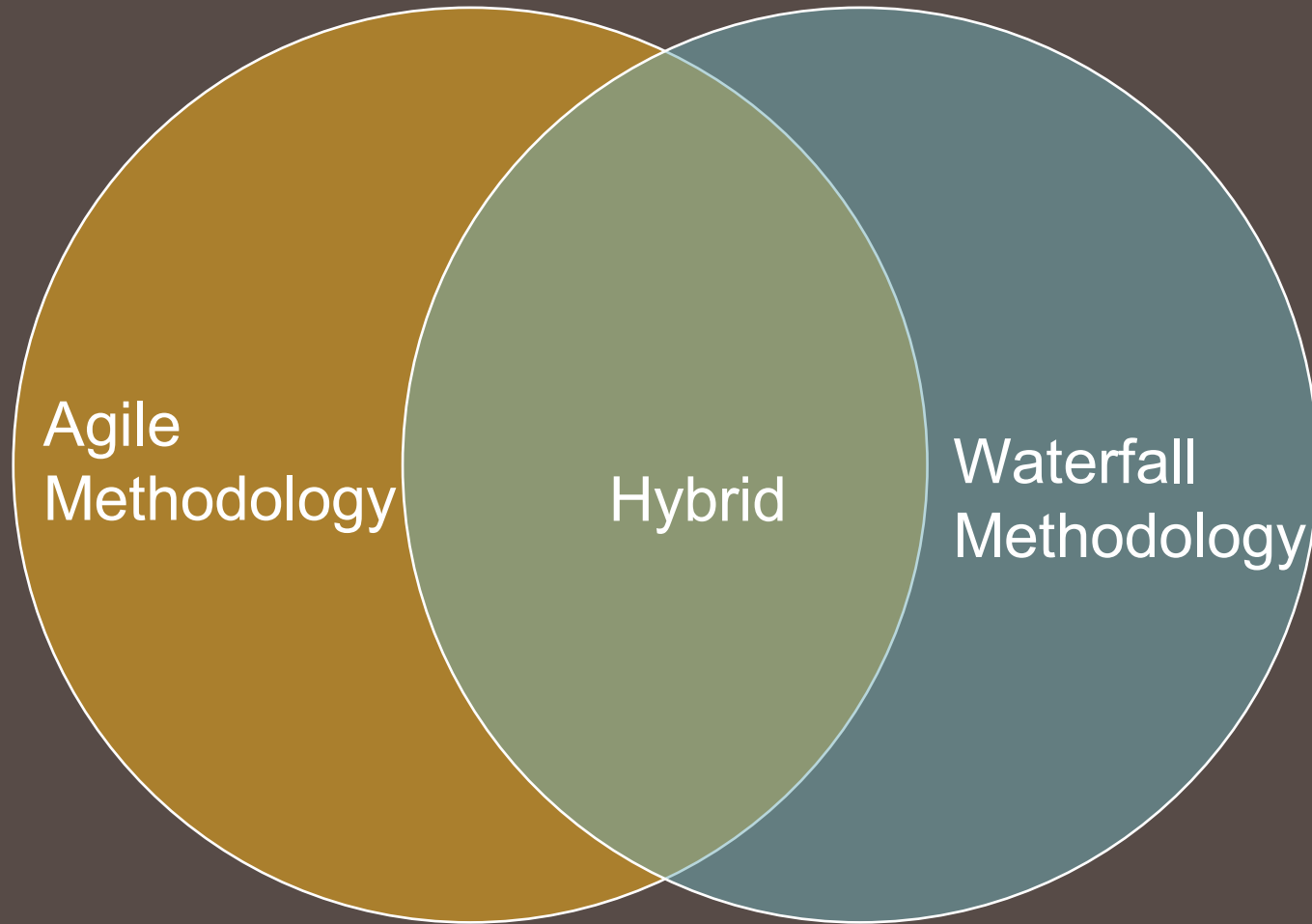
## **Operational Efficiency:**

Overall operational efficiency can see improvements as a result of streamlined workflows, reduced process complexity, and better data accuracy.

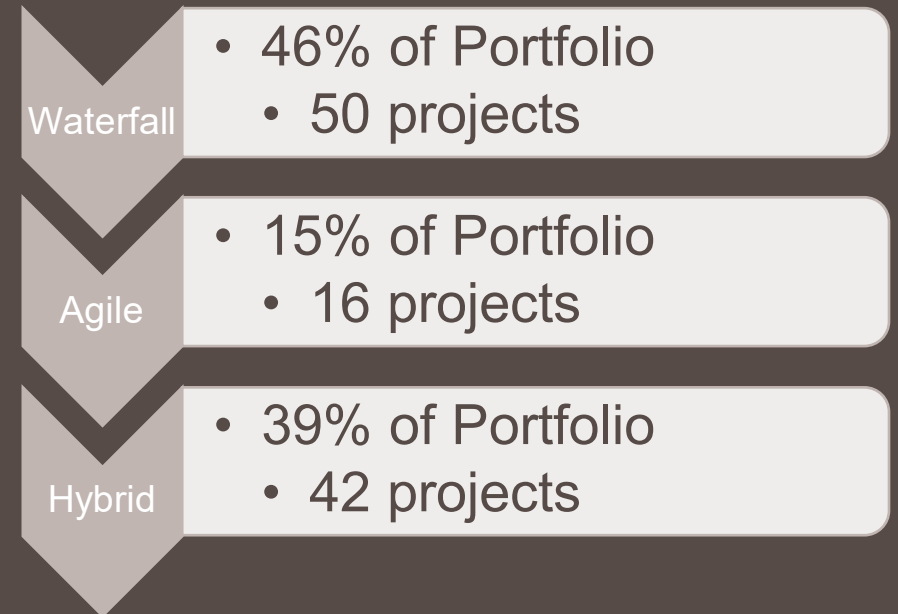
# S/4HANA Upgrade Plan and Timeline



# SMUD's Technology Project Delivery Methodologies



## 2024 Technology Project Portfolio





# Strategic Technology Roadmaps



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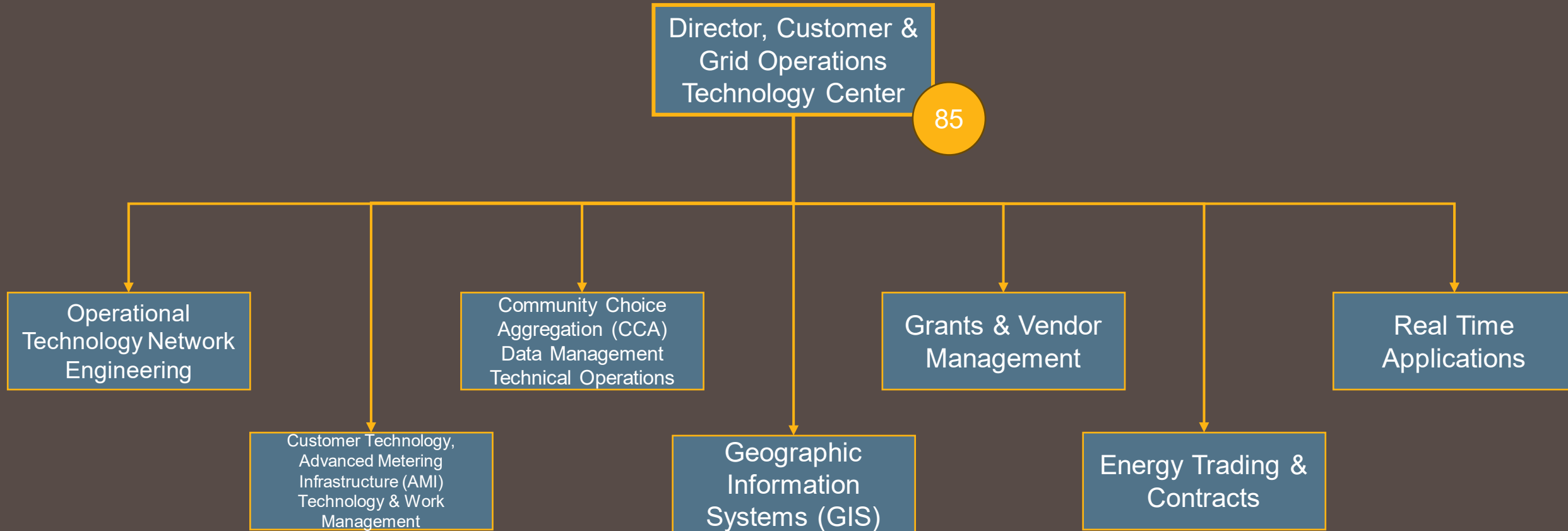
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# Customer & Grid Operations Technology Center Organization



# Next Generation Utility Roadmap

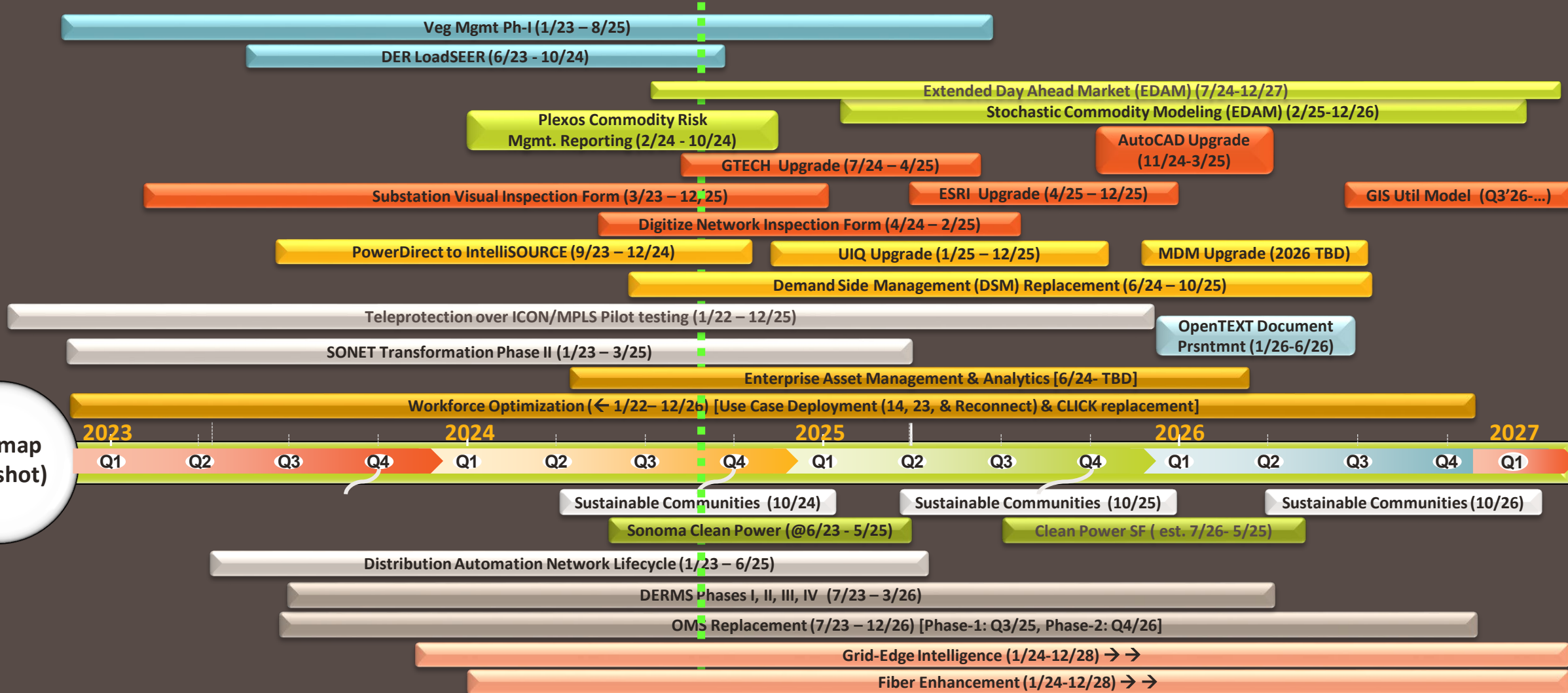
To maintain world-class reliability and security while expanding into the state-of-the-art solutions, and focusing on:

- Industry-leading transformative solutions
- Affordability & Efficiency- Optimization and Scalability
- Exploratory & Aligned investments



# Next Generation Utility Roadmap

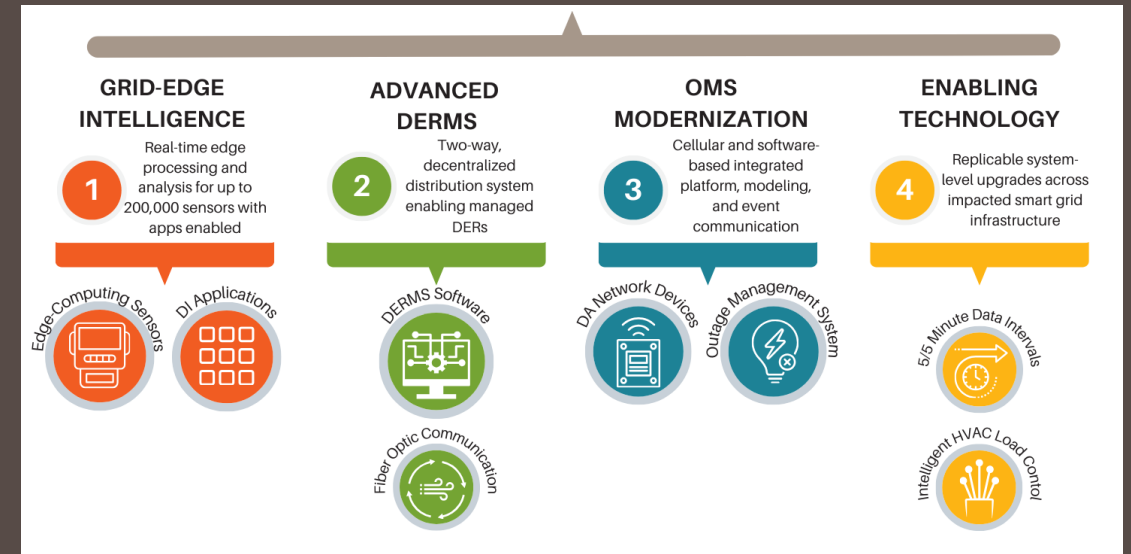
Roadmap  
(snapshot)





# Connected Clean PowerCity

October 2023, SMUD was awarded \$50 million from the Department of Energy for the implementation of Topic Area 2: Smart Grid Grants



# Deployment of Edge Computing Sensors

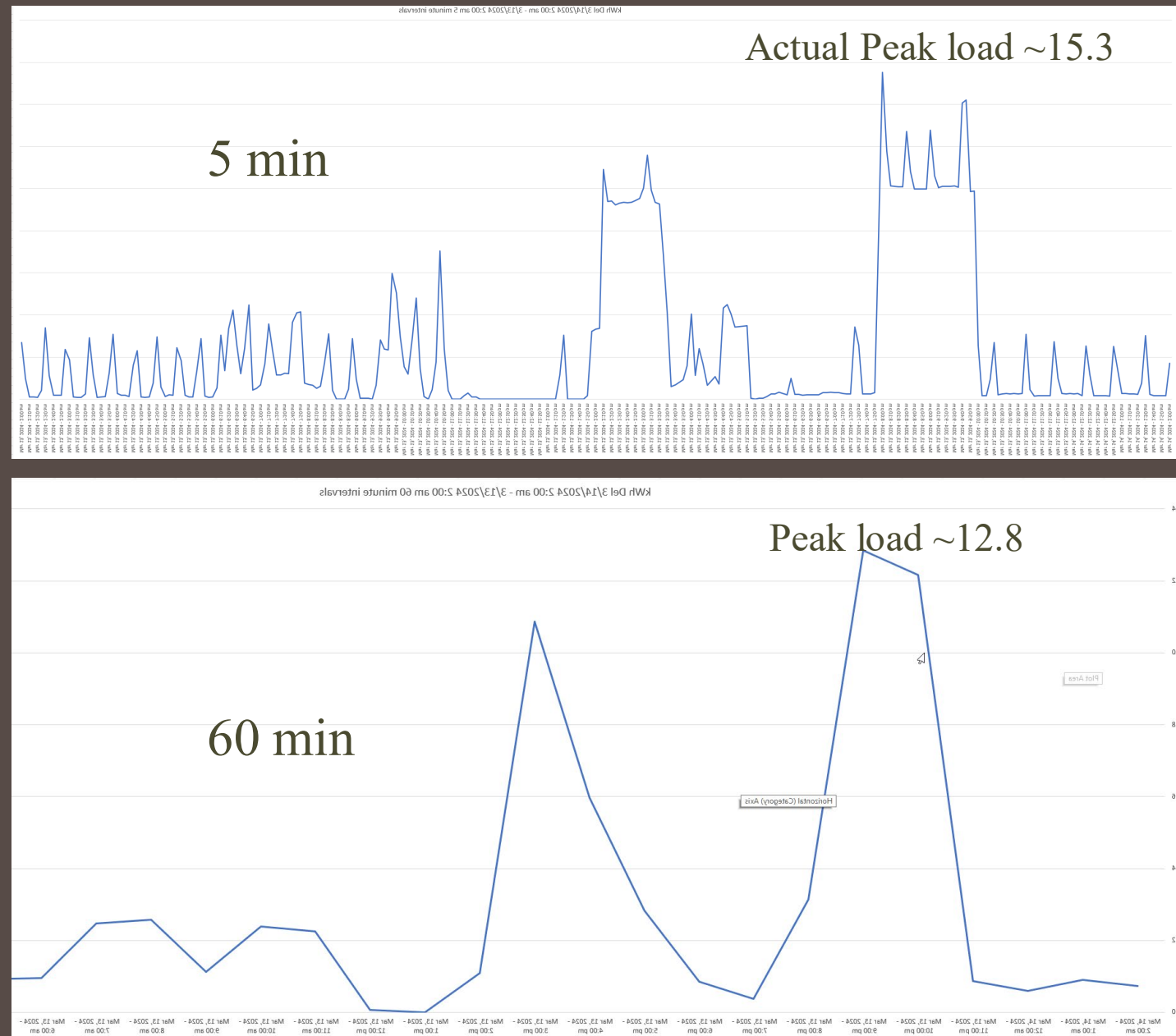
Deploy 200K Itron RIVA Edge Computing Sensors with Measurement Capabilities (Meters) to enable the following use cases:

- Transformer Situational Awareness
- PV Management
- EV Management
- Location Awareness
- Non-Supervisory Control and Data Acquisition (SCADA) Substation Management



# 5/5 Minute Interval Data

Implement 5-minute interval data for commercial and residential customers. This is a change from today's 15-minute for commercial, and 1-hr for residential.



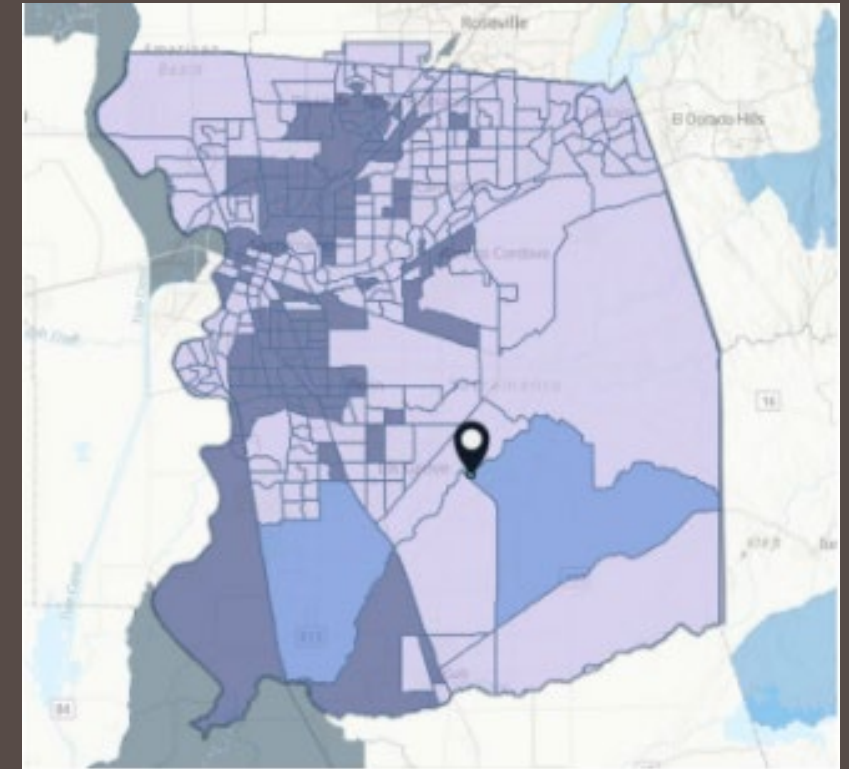
# Advanced DERMS

Integrate existing Advanced Distribution Management System (ADMS) and enhanced Distributed Energy Resource Management System (DERMS) platforms to increase the visibility of behind-the-meter grid-connected devices enabling two-way management of Distributed Energy Resources (DERs), operationalization of customer programs and the resolution of grid conditions through DERs.

- Market/Economic Benefits
  - Send price signals and schedules to controllable and non-controlled DERs via OpenADR.
- Enabling participation of DERs at the grid edge
  - IEEE 2030.5 interface to enable integration with ITRON to control behind-the-meter DERs via Next Gen AMI Meters and DI Apps.

# Enhanced Distribution Automation Network Communications (Fiber)

- Install fiber optic cable to facilitate deployment and improve DERMS situational awareness, control, and data quality and improve Distribution Automation (DA) network communications.



# OMS Replacement

Deploy a new Outage Management System (OMS) and components to modernize system communication.

- Goals/Objectives:
  - Provide extreme responsiveness and resiliency
  - Providing operators a unified view of the as-switched electrical grid model
  - Allow communities to realize enhanced benefits from proposed smart grid elements

## Distribution Automation (DA) Network Device Upgrade

- Deploy up to 300 cellular DA Network Devices (reclosers and cap banks)

# Next Gen Utility Roadmap

**Looking  
Forward**

- Extended Day-Ahead Market (EDAM)
- Virtual Power Plants
- Geographic Information System

# Community Choice Aggregator- CCA

## IT Current Engagements:

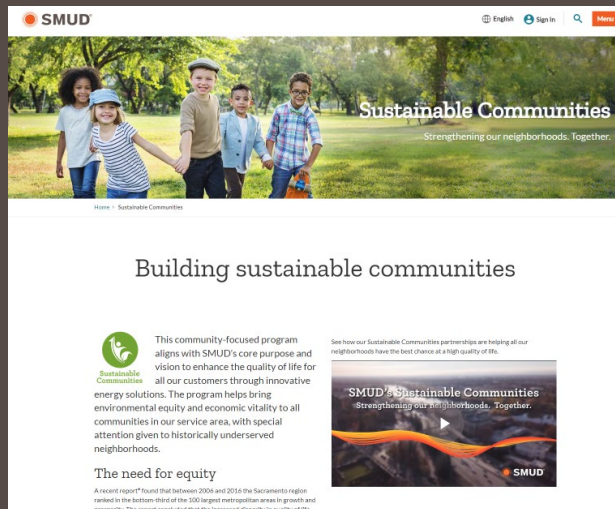


## Highlights:

- Integrated and implemented new Contact Center Technology from Amazon Web Services (AWS) Connect.
- Rolled out for all our clients the California Energy Commission (CEC) Load Management Standard: Rate Identification Number (RIN) and QR code.
- SMUD's Community Energy Services (CES) received a System and Organization Control (SOC) type 2 report for our Billing and Data Management System.



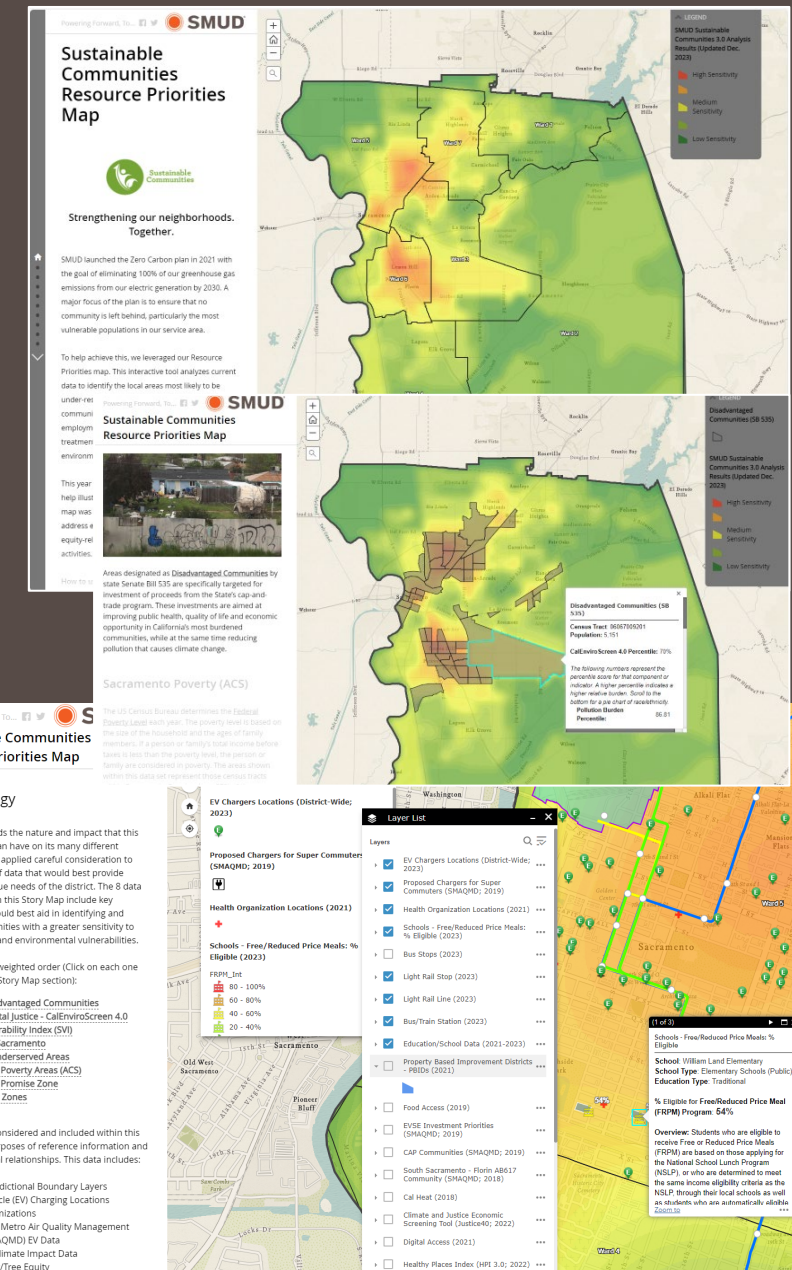
# SMUD Sustainable Communities



Public-facing Story Map to the community developed using Environmental Systems Research Institute, Inc (ESRI):

- Providing Resource Priorities Map, making it easier to identify communities in our service area that need the most help.
- Application provides customers with an interactive, visual representation of the analysis results that are easy to understand.
- Benefits can be shown spatially, and success can be measured accordingly.

[Sustainable Communities \(smud.org\)](https://smud.org)





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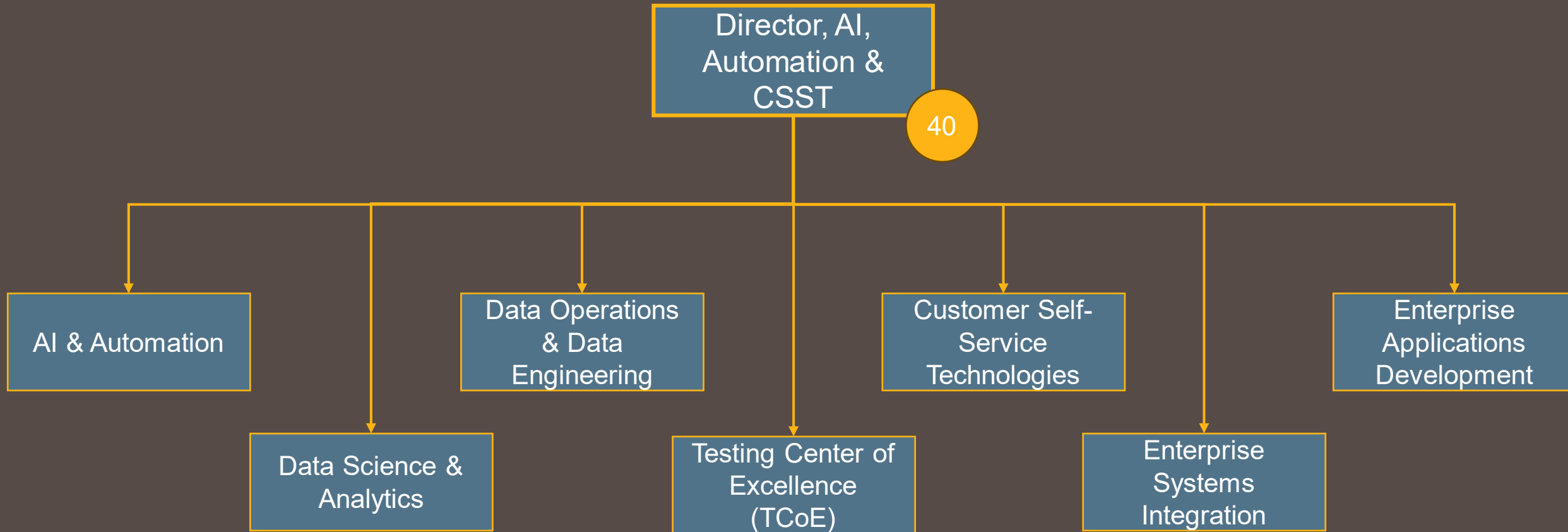
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# Artificial Intelligence (AI), Automation & Customer Self-Service Technologies (CSST) Organization





# Customer Technology Roadmap

Modernize and consolidate customer technology platforms to deliver the utility customer experience of the future:

- Customer Technology Platforms strategy
- Inflight projects (2023-2025)
- Outbound communications



# Customer Technology Platforms (CTP)

## CTP Strategy

- Consolidate customer-facing and customer-supporting technology solutions.
- Create seamless customer experience across all SMUD digital properties
- Includes web, mobile, EV and Contact Center Technology platforms.

## Projects in flight:

### Digital Platform Transformation (DPT)

IT project to transition from a SMUD internally-built digital self-service platform to a consolidated third-party web and mobile platform.

### Contact Center Technology Upgrade

IT project to transition from several legacy contact center technologies to a consolidated modern and innovative Contact Center as-a-service platform.

## CTP TECHNOLOGY SOLUTIONS

### Payment Solution

- Digital self-service web, mobile, IVR as well as CSR and interconnections
- Innovations: Pay-by-text, pay-by-chatbot, prepay\*, Google Pay, Apple Pay, PayPal

### Energy Management Solution

- Energy tools (cost and usage charts)
- Rate analysis
- Rebates and program management
- EV Charging

### Outbound Communications Solution

- 360 view of communications
- Secure messaging (CSR & digital self service)
- Trigger-based communications (email, text and voice)
- Two-way text (outage reporting and payments)

### Marketing Automation Solution

- Email marketing campaigns
- Text marketing campaigns

### Bill Presentment Solution

- Digital bill
- Print bill (printing and mailing)
- PDF bill

# CTP Vendor Contract Consolidation

2022



2024



2025/26



## Problem statement:

- 50 separate integrations that have to be maintained.
- Adds challenges to creating a holistic customer experience.



## Opportunity statement:

The “Customer Technology Platform” strategy aims to:

- Reduce technology procurements.
- Assist Enterprise Architecture to:
  - Modernize
  - Consolidate
  - Innovate
- Support customer-facing technology needs for the Zero Carbon Plan.

# Digital Platform Transformation (DPT) Project Scope 2023-2025



**Digital Platform Transformation (DPT)** is the partnership between Smart Energy Water (SEW) and SMUD working together to procure and implement the following solutions:



**Enterprise (Commercial) Portal** - replaces SMUD's Commercial MyAccount.

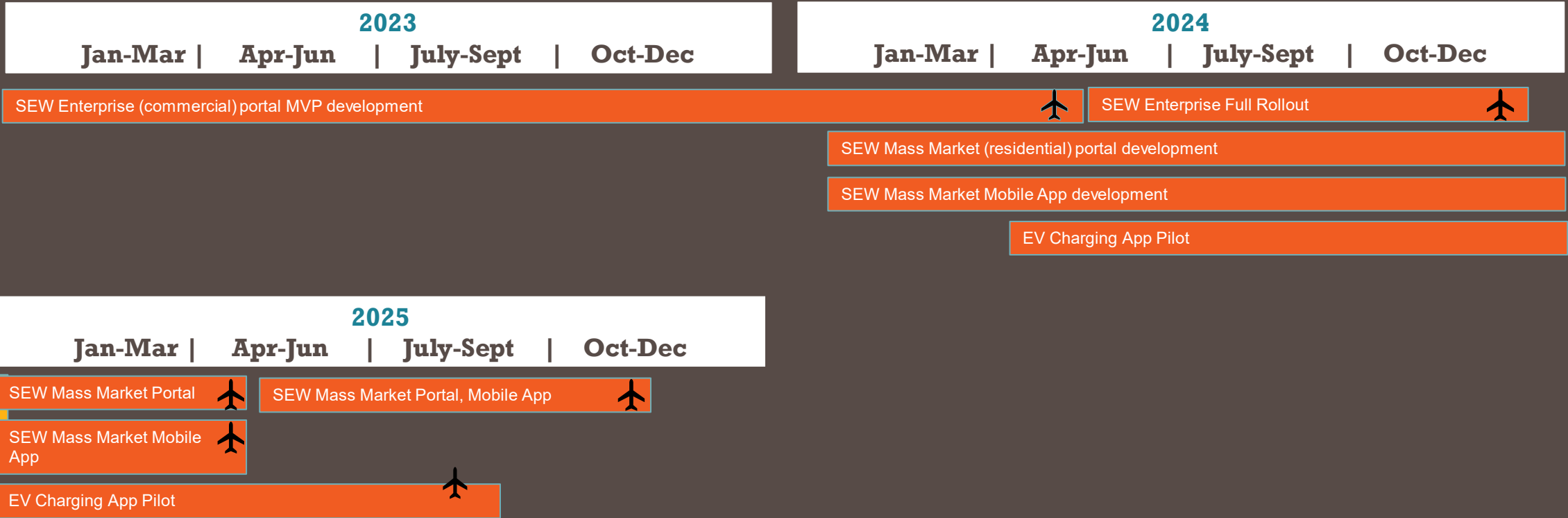


**Mass Market (Residential) Portal** - replaces SMUD's residential MyAccount.



**SMUD Mass Market Mobile App** - replaces SMUD's mobile app.

# CTP Roadmap: 2023-2025 Development Summary

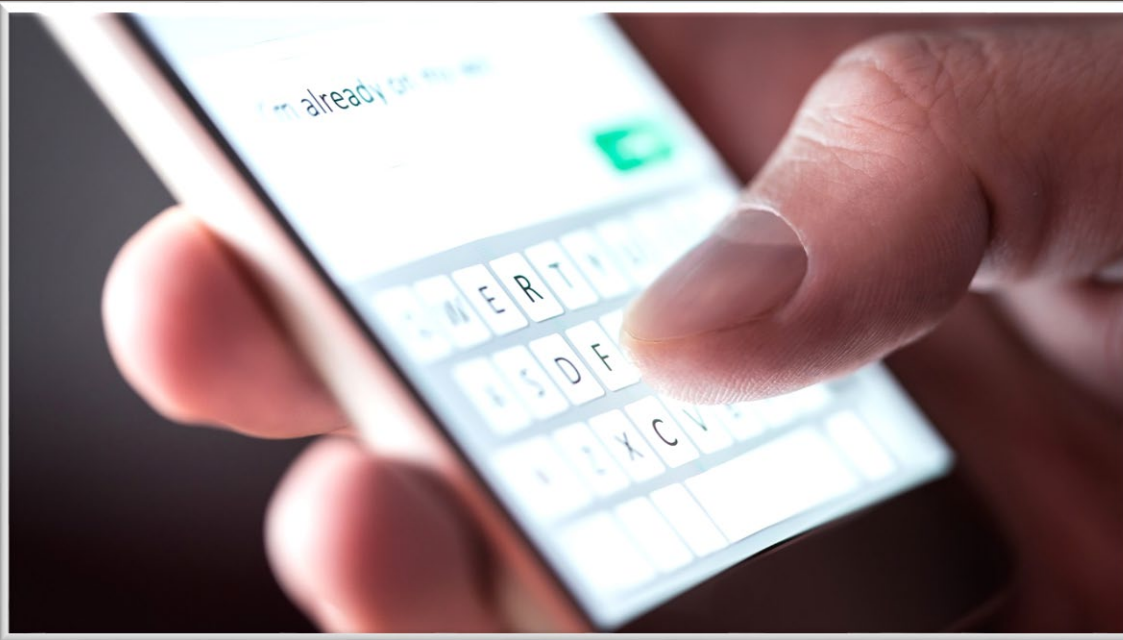




# Outbound Communications



# Outbound Communications Technology Strategy



- Transition existing outbound communications to new consolidated platform leveraging SEW.
  - Alerts examples: outage, mid-bill, and bill threshold.
  - This will sunset SMUD's current technology solutions.
  - It will consolidate outbound communications, providing a 360 view of digital communications and leading to less integrations to manage.
- Provide more email, text and voice alerts and notifications to SMUD customers.
  - A new notifications platform will provide an opportunity for SMUD to expand its alerts and notifications offerings.
  - Offer more text communications.
  - Text examples: confirmations for your start service and move requests or your automatic payment was processed.
- Offer alerts sign-up via digital self-service: commercial web as well as residential web and mobile app users.
  - Customers can set preferences for communications via email, text and voice options.

# Testing Center of Excellence (TCoE)

# TCoE Testing Methodology



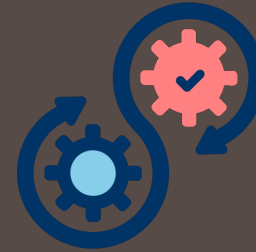
## Agile Testing

Test Case design and execution,  
Bug reporting and tracking



## Automation

Framework design, scripting test  
steps, execution and reporting



## Continuous Integration and Continuous Deployment (CI/CD)

Automated tests are added as part  
of continuous deployment pipeline



## Performance testing

Measure the application's behavior  
under different load conditions

# Outage Map Load Testing

Performed in August 2024 in preparation for storm season

## Testing Parameters

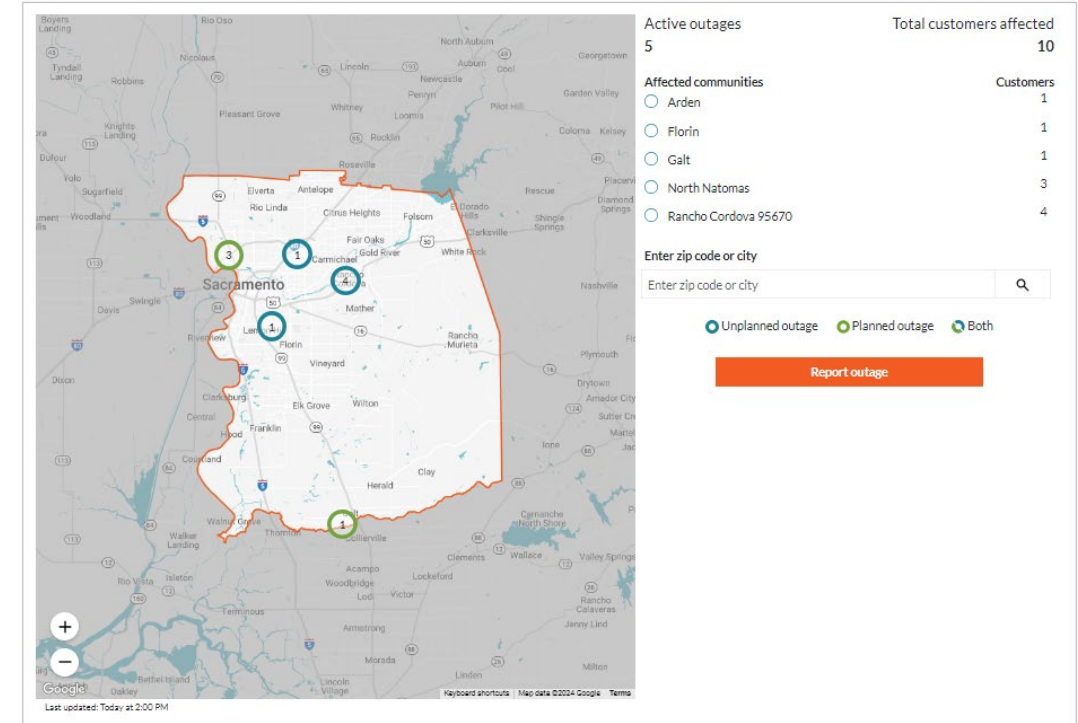
- Tested with current mobile and web outage maps.
- Load produced external to SMUD network.
- Mix of mobile and web browser users.
  - Matched current composition of SMUD outage map users.
- Simulated users based on previous tests as baseline.



## Outage Center

Our priority is keeping you safe during outages. Search and check status.

Search outages by ☒ Outage map ☐ Address



Sign in or register for My Account to manage outage alerts.

[Power outage FAQs](#)  
[Rotating outages](#)  
[Storm safety tips](#)  
[Report a dark street light](#)



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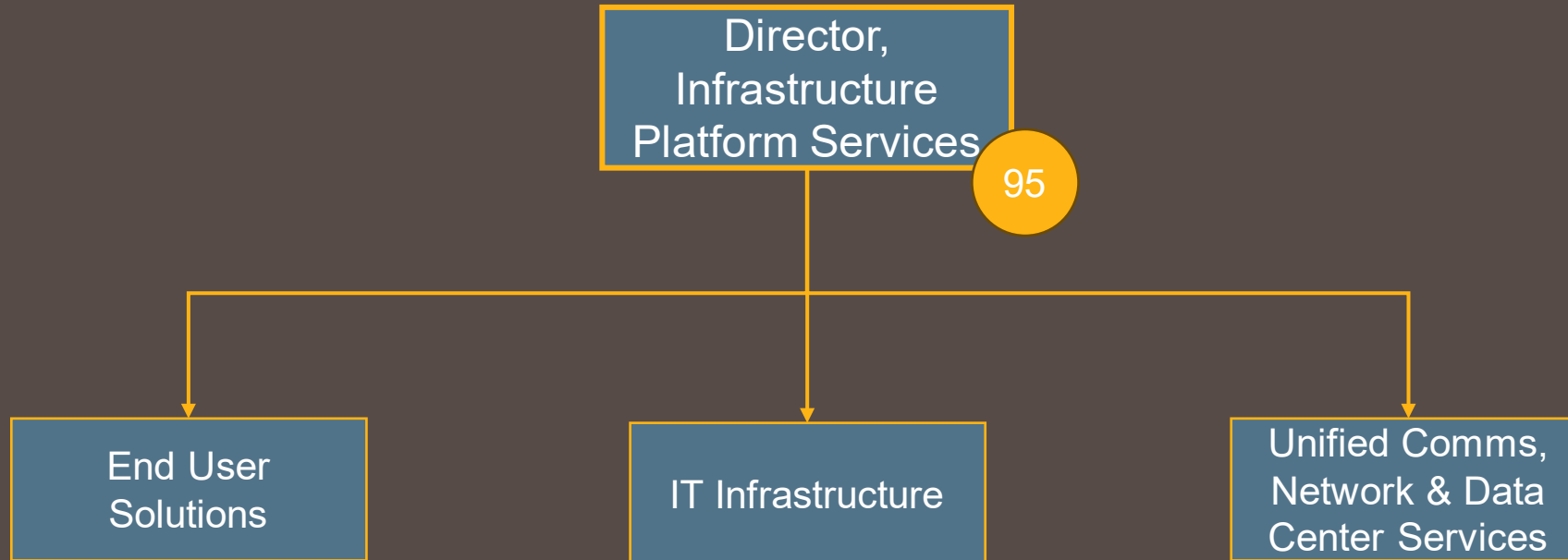
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# IT Infrastructure Technology



# Infrastructure Platform Services





# Infrastructure Platform Services

## 5 Core Focus Areas



# Infrastructure Platform Services

## 5 Core Focus Areas



# Hybrid Work Experience

Create a flexible work environment where employees are productive, engaged and feel connected, regardless of their location

- Identify and provide technology to power a seamless and sustainable hybrid work experience
- Empower employees with technology skills and build a hybrid workforce
- Align IT Organization with current hybrid workforce evolving requirements





# Hybrid Work Experience



## Projects in flight:

### Windows 11 Upgrade

Transformational opportunity to usher in modernized technology experience with hardware and operating system upgrade

### Contact Center Technology Upgrade

Migration from several legacy contact center technologies to a consolidated modern and innovative Contact Center SaaS cloud platform

## Key Initiatives

### Revamped Meeting Space Technology

- Conference Room technology upgrade centered on Microsoft Teams experience
- Board Auditorium re-outfitted to support hybrid experience

### Empowering Mobility

- Tailored, persona-based experience for our hybrid office and field workforce
- Secure & flexible access to SMUD applications
- Frictionless, retail-like technology experience for our devices

### Technology Powered Productivity

- Virtual Whiteboarding
- Gen AI productivity tools to uplevel work focus
- Secure deployment of AI software features (Contact Center Agent Assist)

### Enlightening our Workforce

- End User Experience (EUX) Team formed to provide assistance & enlightenment
- Workforce Education through various workshops

### Storm Ready Facilities

- Alignment with ED&O on equipped storm operations facilities with technology on enhanced storm response capabilities

# Operational Excellence

Deliver operational services that are cost effective, secure & reliable with a speed-to-market focus

- Consistent focus on keeping our systems current with a directive to consistently keep things simple and available
- Leverage automation where it makes sense to lower cost and improve our speed to market for our services
- Rationalization of technology footprint through consolidation



# Operational Excellence



## Projects in flight:

### Infrastructure Lifecycle Management

Consistent focus to modernize the data center technology stack by reducing complexity and consolidating on fewer platforms

### ERP Modernization

Ensuring that the right service levels, financials and operating model considerations are applied when transforming our ERP platform

## Key Initiatives

### Meeting all the nines

- Constant focus on meeting our desired service levels
- Maturation of our Service Management practices
- Ensuring appropriate levels of availability factored in infrastructure design

### Consistent Maturation of IT Disaster Recovery

- Partnering program with Enterprise Business Continuity team
- Practice, practice, practice
- Automation of our documented processes & procedures

### Reduction of Technology Debt

- Simplifying our Data Center Technology Ecosystem
  - Embracing convergence of technology
  - Reducing redundant capabilities

### Automation Opportunities

- Reduction of environment impact of operations
- Self-healing Operations

### AI Opportunities

- Labor-intensive documentation & workflow
- Infrastructure as Code development
- Predictive maintenance awareness and self-healing



# Hybrid, Multi-Cloud

Driving adherence to our IT Strategy  
Guiding Principles within the Cloud and  
SMUD's Data Centers

- Governance and guidance for on-premises and public cloud services that will contribute to SMUD's overall success and drive a strategic vision of our technology landscape.
- SMUD aims to be “**Cloud Smart**”. This means that we will target migrating to or using cloud in “net new” initiatives only when we can see appropriate benefits or value in doing so.





# Hybrid, Multi-Cloud



## Projects in flight:

### Cloud Smart Excellence

Defining a path forward for our technology ecosystem and ensuring we are leveraging our IT guiding principles when building and managing a hybrid, multi-cloud

### Cloud Native Platform Adoption

Leveraging modern, cloud-native platforms to optimize our application and data services

## Key Initiatives

### Choosing the right platform

- Leveraging a Decision Tree to guide our organization in the right direction
- Cloud Center of Excellence Governance oversight

### Setting the direction of our on-premises footprint

- Consolidation of our IT Infrastructure across SMUD Data Centers

### Setting the Stage

- Ensuring Secure Cloud to Cloud Connectivity
- Architectural Multi-Cloud Governance
- Secure accessibility of traditional and cloud native platforms for consumption

### Enabling fast paced innovation

- Balancing governance and self-service processes for fast-paced innovation
- Proper prioritization of PoC and Pilot efforts

### IT Workforce Skills Growth

- Learning Paths for our workforce in new technologies & methodologies
- Financial awareness of operating a Hybrid, Multi-Cloud



Thank you!